Antimicrobial resistance in Campylobacter isolates from sporadic cases of acute human gastroenteritis in Northern Ireland

Letters

ANTIMICROBIAL RESISTANCE IN *CAMPYLOBACTER* ISOLATES FROM SPORADIC CASES OF ACUTE HUMAN GASTROENTERITIS IN NORTHERN IRELAND

Editor,

Thermophilic campylobacters, particularly *Campylobacter jejuni*, continue to remain the most common cause of acute bacterial enteritis in Northern Ireland. Most recent confirmed data for 2006 recorded 937 laboratory reports for Northern Ireland (http://www.cdscni.org.uk/surveillance/Gastro/Campylobacter_sp.htm), approximating to 53.8 cases per 100,000 individuals, compared to an attack rate of 86.7 and 42.8 cases per 100,000 individuals for England & Wales and the Republic of Ireland, respectively. However, in a previous epidemiological study[1], it was estimated that the true prevalence of this infection was approximately 10.3-fold higher, due to patient under-reporting.

In relation to antibiotic resistance of local campylobacters, we have continued to map resistance trends[2,3] during the perod 2004-2007 (n=1102) (Table I). The worrying finding of this study has been the marked increase in resistance to ciprofloxacin, rising to 31.7% in 2007, which is the highest level of resistance of these organisms to this agent that has ever been reported in Northern Ireland. Susceptibility data relating to ciprofloxacin resistance in local human clinical isolates were first reported in 1996 (9%) and this resistance rate has since risen steadily. Presently, the reason(s) for this increase in resistance is unclear. The most likely explanation for this is the ingestion of campylobacters which are more resistant to this agent, rather than the acquisition of resistance *de novo* in the human gastrointestinal tract, epecially as these organisms do not form part of the ecological microflora of the human gut. This therefore encourages examination of reservoirs and sources where such resistant organisms may enter the food chain. One possibility may be consumption of imported poultry meat from origins outside the EU, where veterinary controls of the use antibiotics in animal husbandry may not be stringent, thus leading to the development of fluoroquinolone resistant isolates in chickens prior to slaughter. A previous report in 2003[4] described the importation to Northern Ireland of 500 tonnes of chicken meat per week, which had a resistance to ciprofloxacin of 14% of isolates tested. Similar studies from Belgium[5] and Spain have suggested ciprofloxacin resistance in poultry to be 42% and 99%, respectively.

TABLE I:

Percentage of wildtype Campylobacter isolates resistant to three antibiotic agents over the period 2004-2007.

	Year			
Antibiotic	2004 (n=237)	2005 (n=297)	2006 (n=309)	2007 (n=259)
Ciprofloxacin	20.3%	18.9%	23.6%	31.7%
Erythromycin	2.5%	3.4%	1.9%	1.2%
Tetracycline	20.2%	19.5%	19.7%	22.8%

Another explanation for this rise in ciprofloxacin resistance in local human infections may be the acquisition of more resistant strains outside of Northern Ireland, particularly relating to travel abroad. The arrival of several budget and low cost airlines to Northern Ireland has lead to a marked increase in Northern Ireland residents travelling to countries which have a higher endemic rate of fluoroquinolone-resistance in campylobacters originating from animals, as well as humans. In 2007, airport passenger traffic to EU destinations increased by 21% at Belfast International Airport, resulting in 1,490, 775 passenger journeys (http://www.caa.co.uk/docs/80/airport_data/2007Annual/Table_10_1_EU_and_Other_Intl_Pax_Traffic_2007.pdf). Urgent attention now needs to be directed at this resistance issue in order to ascertain the origins of this marked rise in ciprofloxacin-reisitance in local campylobacters.

In conclusion, primary care practitioners, specialists in infectious diseases, microbiologists and epidemiologists need to be aware of the local increase in antibiotic resistance of thermophilic campylobacters to ciprofloxacin (31.2%) and the relative susceptibility of local wildtype isolates to erythromycin (1.2%).

Acknowledgements: This study was funded by the Research & Development Office, Department of Health & Public Safety, Northern Ireland [Infectious Disease—Recognised Research Group (RRG) 9.9]. The authors have no conflict of interest.

John E Moore[1,2*], *Clinical Scientist in Clinical Microbiology*,
B Cherie Millar[1], *Clinical Scientist in Molecular Microbiology*,
M Ann S McMahon[3], *Research Fellow,*
David A McDowell[3], *Professor of Microbiology*,
Paul J Rooney[1], *Consultant Microbiologist.*

[1]Northern Ireland Public Health Laboratory, Department of Bacteriology, Belfast City Hospital, Belfast, BT9 7AD, UK, [2]School of Biomedical Science, Centre for Molecular Biosciences, University of Ulster, Cromore Road, Coleraine, BT52 1SA, UK,. [3]Food Microbiology Research Group, University of Ulster, Shore Road, Jordanstown, Newtownabbey, BT37 0QB, UK.

jemoore@niphl.dnet.co.uk

REFERENCES

1. Food Standards Agency. A report of the study of infectious intestinal disease in England. London: The Stationary Office; 2000.
2. Moore JE, Crowe M. Heaney N. Crothers E. Antibiotic resistance in *Campylobacter* spp. isolated from human faeces (1980–2000) and foods (1997–2000) in Northern Ireland: an update. *J Antimicrob Chemother* 2001;**48(3):**455–7.
3. Rao D, Rao JR, Crothers E, McMullan R, McDowell D, McMahon A, *et al.* Increased erythromycin resistance in clinical *Campylobacter* in Northern Ireland--an update. *J Antimicrob Chemother* 2005;**55(3)**:395-6.
4. Wilson IG. Antibiotic resistance of *Campylobacter* in raw retail chickens and imported chicken portions. *Epidemiol Infect.* 2003;**131(3)**:1181-6.
5. Van Looveren M, Daube G, De Zutter L, Dumont JM, Lammens C, Wijdooghe M, *et al*. Antimicrobial susceptibilities of *Campylobacter* strains isolated from food animals in Belgium. *J Antimicrob Chemother* 2001;**48(2)**:235-40.